Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L7	3	ANAND-VENKATARAMAN.in.	US-PGPUB; USPAT	OR	ON	2005/12/27 11:15
L6	3	KATUKAM-SURESH.in.	US-PGPUB; USPAT	OR	ON	2005/12/27 11:15
L5	18	(("709"/(238-241).ccls.) or ("370"/("216,225").ccls.) or ("379"/("272,273").ccls.)) and (protected or alternat$3) near2 (circuit$1! or path$1! or segment$1! or link$1! or line$1! or vpn$1!) same (block$2 near2 (list$1! or table$1! or array$1)) and @ad<"20010604"	US-PGPUB; USPAT	OR	ON	2005/12/27 11:13
L2	10177	(("709"/(238-241).ccls.) or ("370"/("216,225").ccls.) or ("379"/("272,273").ccls.)) and (protected or alternat$3) near2 (circuit$1! or path$1! or segment$1! or link$1! or line$1! or vpn$1!) and @ad<"20010604"	US-PGPUB; USPAT	OR	ON	2005/12/27 10:15
L1	38	"709"/("238".ccls.) and vpn with tcp/ip	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/27 09:59
S12	130	((add$3 or includ$3) adj5 link$1! near5 (path or circuit or route or channel)) near15 (protect$5 or alternate or redundan$3) near5 (path$1! or route or channel or segment$1!)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/27 09:47
S13	321529	((("709"/(238-241).ccls.) or ("370"/("216,221,225,238,255"). ccls.) or ("398"/("1,2,57").ccls.))) and @ad<"20010604"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/27 09:46
S32	2	("6765880").PN.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2005/12/27 08:12
S31	9	S29 and S30	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/27 08:12

S30	99	protect$3 adj link$1 with node$1!	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/27 07:19
S29	860	S27 and @ad<"20010604"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/27 07:18
S27	1412	(determin$3 or identif$3) near5 (protect$3 near3 (path or segment or route or circuit or link))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/27 07:18
S28	1	(determin$3 or identif$3) near5 (protect$3 near3 (path or segment or route or circuit or link)) same (block$3 near2 (table or array or list))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/27 07:17
S26	18	S25 and (protect$3 or unprotect$3) adj (line$1! or channel$1! or tunnel$1! or connection$1! or link$1!)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/26 19:34
S25	372	S24 and @ad<"20010601"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/26 19:33
S24	608	(prevent$3 or unavailable) near20 (us$3 or access$3 or selection) same ((alternat$3 or protect$3 or secondary or recover$3) near3 (path or segment or link$1!))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/26 19:06
S23	6	(blocked near2 (list or table or array)) and prevent$3 and (us$3 or access$3) same (protect$3 near3 link$1!)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/26 19:03
S22	0	(blocked near2 (list or table or array)) same prevent$3 same (us$3 or access$3) same (protect$3 near3 link$1!)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/26 19:01
S21	0	(blocked near2 (list or table or array)) with prevent$3 near10 (us$3 or access$3) same (protect$3 near3 link$1!)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/26 19:00

S20	34	(protect$3 near2 link$1!) and (block$3 near2 (list or table or array))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/26 18:58
S19	12	(table or tree or list or array) near10 (node$1! near6 link$1!) near20 protect$3 near2 path$1!	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/26 17:52
S18	13	identif$3 near10 (node$1! near6 link$1!) near20 protect$3 near2 path$1!	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/26 16:23
S17	37	S16 and @ad<"20010601"	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/26 16:18
S16	99	protect$3 adj link$1 with node$1!	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/26 16:03
S15	1	((blocked adj (list or table or array)) with (node$1! with link$1!))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2005/12/26 16:01

IEEE Xplore RELEASE 2.1

Home | Login | Logout | Access Information | Alerts | Sitemap | Hel

Welcome United States Patent and Trademark Office

AbstractPlus BROWSE SEARCH IEEE XPLORE GUIDE SUPPORT

View Search Results | Previous Article | Next Article e-mail printer friend

Access this document

Full Text: PDF (274 KB)

Download this citation

Choose Citation

Download EndNote,ProCite,RefMan

» Learn More

Rights & Permissions

Request Permissions RIGHTSLINK

» Learn More

On a preemptive multi-class routing scheme with protection paths for WDM networks

Sen, A. Shen, B.H. Hao, B. Jayakumar, H. Bandyopadhyay, S.
Dept. of Comput. Sci. & Eng., Arizona State Univ., Tempe, AZ, USA

This paper appears in: **Communications, 2003. ICC '03. IEEE International Conference on**
Publication Date: 11-15 May 2003
Volume: 2
On page(s): 1417 - 1422 vol.2
Number of Pages: 5 vol.xlv+3634
ISSN:
INSPEC Accession Number:7905866
Digital Object Identifier: 10.1109/ICC.2003.1204624
Posted online: 2003-06-20 13:34:41.0

Abstract
A large optical network may carry multiple traffic classes with different priorities and fault-tolerance requirement. Higher priority traffic may require having a back-up path so that the traffic can be switched quicl to this path in case of a failure in the primary path. The lower priority traffic classes may not have any such requirement. In the path protection schemes currently in use for the WDM networks, a backup path is computed for all traffic, whenever a **primary path** is established between a source-destination pair. The resource needed for communication using the backup path are reserved (or set aside) for data communicatic between a source-destination pair, and are utilized only when the **primary path** is unavailable due to a failur in the network. The traffic carrying capacity of a network can be increased, if the resources set aside for the backup paths are utilized for data communication. In this paper we propose a path protection scheme for networks with multiple classes of traffic. The key features of our scheme are (i) not all traffic classes have backup paths - only higher priority classes have backup paths, (ii) **primary paths** of lower priority share wavelengths with secondary paths of higher priority traffic, and (iii) lower priority traffic can be preempted by higher priority traffic in case of a failure. The sharing of a wavelength between a **primary path** of a lower priority communication with the secondary path of a higher priority communication allows the network to satis more call requests, thereby reducing the call blocking probability. We provide a mathematical programming formulation for computing the primary and backup paths for call requests in a dynamic environment. We also compute the call blocking probability of our scheme and compare it with the call blocking probability of the conventional scheme through simulation. Our experimental results show significant gain by the proposed scheme over the conventional scheme.

Index Terms
Inspec

Controlled Indexing
mathematical programming optical fibre networks telecommunication network routing telecommunication traffic wavelength division multiplexing

Non-controlled Indexing
WDM networks call blocking probability higher priority communication lower priority communication mathematical programming multiclass routing scheme multiple traffic class optical network path protection scheme protection paths wavelength division multiplexing

Author Keywords
Not Available

References

No references available on IEEE Xplore.

Citing Documents

Access this document

Full Text: PDF (746 KB)

Download this citation

Choose Citation

Download EndNote,ProCite,RefMan

» Learn More

Rights & Permissions

Request Permissions RIGHTSLINK

» Learn More

Avoiding transient loops during IGP convergence in IP networks

Francois, P. Bonaventure, O.
Dept. of CSE, Univ. Catholique de Louvain, Belgium

This paper appears in: **INFOCOM 2005. 24th Annual Joint Conference of the IEEE Computer and Communications Societies. Proceedings IEEE**
Publication Date: 13-17 March 2005
Volume: 1
On page(s): 237 - 247 vol. 1
Number of Pages: 4 vol. (xxxiii+2881)
ISSN: 0743-166X
INSPEC Accession Number:8606106
Digital Object Identifier: 10.1109/INFCOM.2005.1497895
Posted online: 2005-08-22 11:43:49.0

Abstract
When the topology of an IP network changes due to a link failure or a link metric modification, the routing tables of all the routers must be updated. Each of those updates may cause transient loops. In this paper, we prove that by ordering the updates of the routing tables on the routers, it is possible to avoid all transient loop during the convergence of ISIS or OSPF after a planned link failure, an unplanned failure of a **protected link** and after a link metric modification. We then propose a protocol that allows the routers to order the update of their routing tables to avoid transient loops without requiring any complex computation.

Index Terms
Inspec

Controlled Indexing
IP networks computer network reliability routing protocols telecommunication links telecommunication network planning telecommunication network topology

Non-controlled Indexing
IP network topology link failure link metric modification planned link failure **protected link** routing protocol routing tables transient loops

Author Keywords
Not Available

References

No references available on IEEE Xplore.

Citing Documents

No citing documents available on IEEE Xplore.

Indexed by Inspec

© Copyright 2005 IEEE – All Rights Reser

Results for **"((protected links)<in>metadata)"**
Your search matched **2** of **1286976** documents.
A maximum of **100** results are displayed, **25** to a page, sorted by **Relevance** in **Descending** order.

» Search Options

View Session History

New Search

Modify Search

((protected links)<in>metadata)

Check to search only within this results set

Display Format: Citation Citation & Abstract

» Key

IEEE JNL	IEEE Journal or Magazine
IEE JNL	IEE Journal or Magazine
IEEE CNF	IEEE Conference Proceeding
IEE CNF	IEE Conference Proceeding
IEEE STD	IEEE Standard

Select Article Information

1. **Avoiding transient loops during IGP convergence in IP networks**
Francois, P.; Bonaventure, O.;
INFOCOM 2005. 24th Annual Joint Conference of the IEEE Computer and Communications Societies. Proceedings IEEE
Volume 1, 13-17 March 2005 Page(s):237 - 247 vol. 1
Digital Object Identifier 10.1109/INFCOM.2005.1497895
AbstractPlus | Full Text: PDF(746 KB) IEEE CNF

2. **Improving wireless link throughput via interleaved FEC**
Ling-Jyh Chen; Sun, T.; Sanadidi, M.Y.; Gerla, M.;
Computers and Communications, 2004. Proceedings. ISCC 2004. Ninth International Symposium on
Volume 1, 28 June-1 July 2004 Page(s):539 - 544 Vol.1
Digital Object Identifier 10.1109/ISCC.2004.1358548
AbstractPlus | Full Text: PDF(606 KB) IEEE CNF

Indexed by Inspec

© Copyright 2005 IEEE -- All Rights Reserved

IEEE Xplore RELEASE 2.1

Home | Login | Logout | Access Information | Alerts | Sitemap | Hel

Welcome United States Patent and Trademark Office

AbstractPlus BROWSE SEARCH IEEE XPLORE GUIDE SUPPORT

View Search Results | Previous Article | Next Article

e-mail printer friend

Access this document

Full Text: PDF (581 KB)

Download this citation

Choose Citation

Download EndNote,ProCite,RefMan

» Learn More

Rights & Permissions

Request Permissions RIGHTSLINK

» Learn More

Path-protection routing and wavelength assignment (RWA) in WDM mesh networks under duct-layer constraints

Hui Zang Ou, C. Mukherjee, B.
Sprint Adv. Technol. Labs., Burlingame, CA, USA

This paper appears in: **Networking, IEEE/ACM Transactions on**
Publication Date: April 2003
Volume: 11 , Issue: 2
On page(s): 248 - 258
ISSN: 1063-6692
INSPEC Accession Number:7602969
Digital Object Identifier: 10.1109/TNET.2003.810313
Posted online: 2003-04-22 09:29:23.0

Abstract
This study investigates the problem of fault management in a wavelength-division multiplexing (WDM)-based optical mesh network in which failures occur due to fiber cuts. In reality, bundles of fibers often get cut at the same time due to construction or destructive natural events, such as earthquakes. Fibers laid down in the same duct have a significant probability to fail at the same time. When path protection is employed, we require the **primary path** and the backup path to be duct-disjoint, so that the network is survivable under single-duct failures. Moreover, if two **primary paths** go through any common duct, their backup paths cannot share wavelengths on common links. This study addresses the routing and wavelength-assignment problem in a network with path protection under duct-layer constraints. Off-line algorithms for static traffic is developed to combat single-duct failures. The objective is to minimize total number of wavelengths used on all the links in the network. Both integer linear programs and a heuristic algorithm are presented and their performance is compared through numerical examples.

Index Terms
Inspec

Controlled Indexing
integer programming linear programming network topology optical fibre networks telecommunication network reliability telecommunication network routing telecommunication traffic wavelength division multiplexing

Non-controlled Indexing
WDM mesh networks backup path duct-disjoint paths duct-layer constraints fault management fiber cuts heuristic algorithm integer linear programs network performance off-line algorithms optical mesh network path-protection routing **primary path** routing and wavelength assignment single-duct failures static traffic wavelength-division multiplexing

Author Keywords
Not Available

References

1 S.Ramamurthy and B.Mukherjee, "Survivable WDM mesh networks—Part I: Protection," in *Proc. IEEE INFOCOM*, Mar. 1999, pp. 744-751.
Abstract | Full Text: PDF (564KB)

2 R.Iraschko, M.MacGregor, and W.Grover, "Optimal capacity placement for path restoration in STM or AT mesh-survivable network," *IEEE J. Select. Areas Commun.*, vol. 16, pp. 325-336, Sept. 1998.
Abstract | Full Text: PDF (264KB)

3 H.Zang and B.Mukherjee, "Connection management for survivable wavelength-routed WDM mesh networks," *Opt. Netw. Mag.*, vol. 2, pp. 17-28, Sept. 2001.
[Buy Via Ask*IEEE]

4 O.Gerstel, "Opportunities for optical protection and restoration," in *Proc. Optical Fiber Communications*

Conf., 1998, pp. 269-270.
Abstract | Full Text: PDF (216KB)

5 G.Mohan, C. S. R.Murthy, and A. K. Somani, "Efficient algorithms for routing dependable connections in WDM optical networks," *IEEE/ACM Trans. Networking*, vol. 9, pp. 553-566, Oct. 2001.
Abstract | Full Text: PDF (224KB)

6 S.Ramamurthy and B.Mukherjee, "Survivable WDM mesh networks—Part II: Restoration," in *Proc. IEEE Integrated Circuits Conf.*, June 1999, pp. 2023-2030.
Abstract | Full Text: PDF (672KB)

7 J.Strand, A.Chiu, and R.Tkach, "Issues for routing in the optical layer," *IEEE Commun. Mag.*, vol. 39, pp. 81-87, Feb. 2001.
Abstract | Full Text: PDF (96KB)

8 P.Sebos, J.Yates, G.Hjalmtysson, and A.Greenberg, "Auto-discovery of shared risk link groups," in *Proc. Optical Fiber Communications Conf.*, Mar. 2001, p. WDD3.
Abstract | Full Text: PDF (280KB)

9 P.Sebos, J.Yates, A.Greenberg, and D.Rubenstein, "Effectiveness of shared risk link group auto-discove in optical networks," in *Proc. Optical Fiber Communications Conf.*, Mar. 2002, p. ThO5.
Abstract | Full Text: PDF (374KB)

10 H.Zang, J. P.Jue, and B.Mukherjee, "A review of routing and wavelength assignment approaches for wavelength-routed optical WDM networks," *Opt. Netw. Mag.*, vol. 1, pp. 47-63, Jan. 2000.
[Buy Via Ask*IEEE]

11 L.Sahasrabuddhe and B.Mukherjee, "Fault tolerance in IP-over-WDM networking: WDM protection versu IP restoration," *IEEE J. Select. Areas Commun.*, vol. 20, pp. 21-33, Jan. 2002.
Abstract | Full Text: PDF (282KB)

12 B. T.Doshi, S.Dravida, P.Harshavardhana, O.Hauser, and Y.Wang, "Optical network design and restoration," *Bell Labs Tech. J.*, vol. 4, pp. 58-84, Jan.–Mar. 1999.
[CrossRef] [Buy Via Ask*IEEE]

13 M.Sridharan, A. K.Somani, and M. V.Salapaka, "Approaches for capacity and revenue optimization in survivable WDM networks," *J. High Speed Networks*, vol. 10, no. 2, pp. 109-125, 2001.
[Buy Via Ask*IEEE]

14 A. F.Fumagalli, I.Cerutti, F. B.Masetti, R.Jagannathan, and S.Alagar, "Survivable networks based on optimal routing and WDM self-healing rings," in *Proc. IEEE INFOCOM*, vol. 2, Mar. 1999, pp. 726-733.
Abstract | Full Text: PDF (624KB)

15 G.Sahin and M.Azizoglu, "Optical layer survivability: Single service-class case," in *Proc. SPIE Opticomm* Richardson, TX, vol. 4233, Oct. 2000, pp. 267-278.
[Buy Via Ask*IEEE]

16 S.Sengupta and R.Ramamurthy, "From network design to dynamic provisioning and restoration in optical cross-connect mesh networks: An architectural and algorithmic overview," *IEEE Network*, vol. 15, pp. 46-54, Jul./Aug. 2001.
Abstract | Full Text: PDF (1944KB)

17 G.Ellinas, E.Bouillet, R.Ramamurthy, J.Labourdette, S.Chaudhuri, and K.Bala, "Routing and restoration architectures in mesh optical networks," *SPIE Opt. Networks Mag.*, vol. 4, pp. 91-106, Jan./Feb. 2003.
[Buy Via Ask*IEEE]

18 O.Gerstel and R.Ramaswami, "Optical layer survivability-an implementation perspective," *IEEE J. Select. Areas Commun.*, vol. 18, pp. 1885-1899, Oct. 2000.
Abstract | Full Text: PDF (256KB)

19 P.-H.Ho and H. T.Mouftah, "A novel routing protocol for WDM mesh networks," in *Proc. Optical Fiber Communications Conf.*, Mar. 2002, p. TuG4.
Abstract | Full Text: PDF (300KB)

20 D. Dunn, W. Grover, and M. MacGregor, "Comparison of k-shortest paths and maximum flow routing f network facility restoration," *IEEE J. Select. Areas Commun.*, vol. 12, pp. 88-99, Jan. 1994.
Abstract | Full Text: PDF (1100KB)

21 M. R.Garey and D. S.Johnson, *Computers and Intractability: A Guide to the Theory of NP-Completeness* New York: Freeman, 1979.
[Buy Via Ask*IEEE]

22 J. W.Suurballe and R. E.Tarjan, "A quick method for finding shortest pairs of disjoint paths," *Networks*, vc 14, pp. 325-336, 1984.
[Buy Via Ask*IEEE]

23 D. E.Knuth, J. H.Morris, and V. R.Pratt, "Fast pattern matching in strings," *SIAM J. Comput.*, vol. 6, no. 1,

pp. 323-350, 1977.
[Buy Via Ask*IEEE]

24 *CPLEX* Mountain View, CA: ILOG, http://www.ilog.com/products/cplex.

25 S.Datta, S.Sengupta, S.Biswas, and S.Datta, "Efficient channel reservation for backup paths in optical mesh networks," in *Proc. IEEE Globecom*, 2001, pp. 2104-2108.
Abstract | Full Text: PDF (682KB)

Citing Documents

1 Subpath protection for scalability and fast recovery in optical WDM mesh networks, Canhui Ou; Hui Zang Singhal, N.K.; Keyao Zhu; Sahasrabuddhe, L.H.; MacDonald, R.A.; Mukherjee, B.
Selected Areas in Communications, IEEE Journal on
On page(s): 1859- 1875, Volume: 22, Issue: 9, Nov. 2004
Abstract | Full Text: PDF (856)

2 Survivable lightpath provisioning in WDM mesh networks under shared path protection and signal quality constraints, Xi Yang; Lu Shen; Ramamurthy, B.
Lightwave Technology, Journal of
On page(s): 1556- 1567, Volume: 23, Issue: 4, April 2005
Abstract | Full Text: PDF (656)

View Search Results | Previous Article | Next Article

Help Contact Us Privacy & Security IEEE.c

Indexed by Inspec

© Copyright 2005 IEEE – All Rights Reser